The AMERICAN PERFUMER

AND ESSENTIAL OIL REVIEW

THE PERFUMER PUBLISHING COMPANY, NEW YORK

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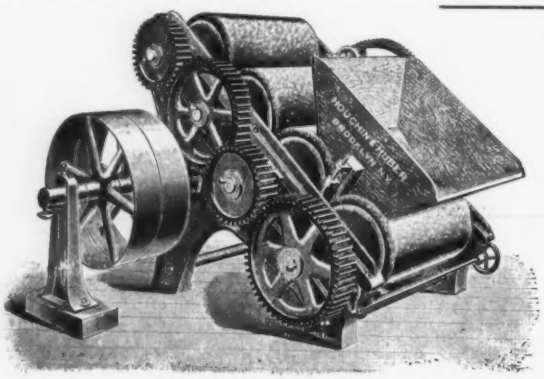

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THE AMERICAN PERFUMER

and ESSENTIAL OIL REVIEW

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THE PERFUMER PUBLISHING CO., 220 BROADWAY, NEW YORK

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ADVERTISING RATES ON APPLICATION.

EDITORIAL NOTICE

WE invite correspondence and special articles upon subjects of interest to all engaged in the manufacture and sale of Perfumes, Soaps, Toilet Articles, Flavoring Extracts, etc. THE AMERICAN PERFUMER and ESSENTIAL OIL REVIEW is the OPEN FORUM for each and all in the Trade. The usual right to reject objectionable matter and advertisements is reserved.

THE AIM.

In taking over the publication of THE AMERICAN PERFUMER the present publishers recognize their responsibility, and accept it, ready to keep the standard high and to increase, if possible, the amount of interesting matter published month by month.

In so doing the scope of the periodical is to be broadened, so that every one who uses Essential Oils in any shape or form will feel that this magazine is indispensable. The perfumer, the soap-maker, the manufacturer of toilet articles, the maker of flavoring extracts, each and all must want to read the magazine for all that it has to tell them bearing directly upon their interests. Heretofore there has been much in THE AMERICAN PERFUMER to hold the attention of all these trades, but it is the purpose to extend this power by making it more constant and intense.

If there have been presented the most important articles yet written on the chief Essential Oils as well as the Vanilla Bean and Vanillin, together with various articles of more general interest, these are only earnest of better and greater articles hereafter.

In this number we have the thorough review of the progress of the science of Essential Oils. We have the comprehensive article on cloves, so important a product to-day, as well as the other articles taking up matters from a commercial standpoint, by no means the least important.

It is not our purpose to neglect the commercial side of these pursuits, for that is a very important side, and one in which we wish to be of practical use to our readers. It is actually possible for you to make this side even more useful by writing us criticisms, or commendations of any special points which you find to be ill-advised or good.

It is our purpose also to cover the mechanical side of the manufacture of soap and all of the other products which are naturally allied to the lines mentioned above. Progress in machinery has made American success possible, and it would be a radical error were we to omit this department of work.

We are certain that if we can make this the organ of all the trades interested, be it ever so remotely, in Essential Oils we will have earned, not only the right to exist, but the further privilege of serving wisely and well.

In reducing the price of subscription to two dollars per year the publishers give earnest of the sincerity of their desire to reach the largest possible number of those interested in the subjects handled so ably in this magazine. Those subscribers who have already paid the larger subscription fee will not suffer, for their terms of subscription will be extended six months.

We feel that we have the right to expect the general support of all connected in any way with the use of Essential Oils, or their applications in many different lines. We shall strive to deserve it by acting with absolute fairness to all, conducting the editorial department upon even a higher plane than heretofore. Our columns are open to all, and every one is entitled to a public hearing, without malice.

THE GOVERNMENT AND THE MERCHANT.

The Government of the United States is not the persecutor but the protector of mercantile interests. No honest merchant or manufacturer need fear the investigations or the regulations that will soon be put in force. That the purpose of the Government is to do justice to all is best evidenced by the public hearings now taking place in New York City, in connection with the regulations of Pure Food.

It will be the fault of the manufacturers themselves if they do not present the matters in which they are interested so forcibly that the commission will be compelled to do them justice. We believe that Dr. Wiley, for instance, is not unwilling to permit the use of harmless aniline colors, and that before the Commission sends out its regulations every opportunity will be given for the presentation of the facts relating to colors, synthetic products of value and with no deleterious effects, and late methods of manufacture, not in themselves harmful to consumers.

The state legislators and commissions have made themselves ridiculous in more ways than one. For instance, in Ohio, it is insisted that Vanilla Extract though absolutely pure and made from the bean and nothing else, should contain some sugar, simply because that is the old way of making it, but sugar no more belongs in good vanilla extract than it does in toilet water.

The question of the use of vanillin will also arise, and here too the line must be drawn between vanillin made from Oil of Cloves by an approved process, and chemically pure, and that mixed with acetanilid or other materials not rightfully there.

The matter of the label will, after all, prove a very simple matter. The label must correspond with the contents of the package and *vice versa*. The manufacturer who bottles a fruit oil that never saw a fruit need only state on the label the contents of the package, and no one can find fault.

Co-operation with the Government officials is the key to the entire problem, and the merchant or manufacturer who manifests the proper spirit of willingness to conform to the regulations as promulgated will have nothing to fear.

AND KALAMAZOO, TOO!

"'Now, what do you think o' that?" The farmers of the neighborhood of Kalamazoo who grow a large part of the peppermint and distill it into oil for the rest of the world are trying to form a "Trust"! They met in Kalamazoo on the fifth of this month to complete the organization of their body, which according to the call for the meeting is nothing more nor less than a "Trust." We had been of the opinion that the farmers were opposed to all trusts. The entire Populist movement was anti-trust, and ever since the various States and the National Government have legislated strenuously against the trusts. Of course when the farmers organize "in restraint of trade" that is quite another matter and the very place of their meeting, Kalamazoo, puts the stamp of Populist approval upon the project.

But this is no joking matter. Oil of Peppermint is being very widely used, and it would be a pity to "kill the goose" that lays this redolent "golden egg." One way to do it is to raise the price so high that substitutes will be used. We may be compelled to use the Japanese product, if the American farmers make prices prohibitive. It is hardly necessary to hint at steps that might be taken by the United States Government, for naturally the farmers of Kalamazoo have already considered this side of the question and are ready to go to jail, if necessary, for the right to organize. The name of their centre of organization is so dear to the American public that we may hope soon to see more than one poem on the subject of

O Kalamazoo,
You, too!

THE SMALL PACKAGE.

Do away with the half-ounce package and eleminate loss. This is acknowledged to be true by all of the Manufacturing Perfumers, and yet year after year this package is put up and pushed with other goods. Attempts have been made at various times to secure an agreement among the perfumers to refuse to put up packages of this size because they cannot be sold at a profit, yet all of the efforts have been in vain.

Is it a fact that one is afraid and the other dare not abandon this wasteful size? Are all afraid of their competitors? It would certainly not be an agreement in restraint of trade if the prominent perfumers decided at the next convention that they would not have a half-ounce bottle in stock. It would be an excellent move for goods of proper size.

Who can lose if all will act together?

LEADING AMERICAN PERFUMERS.

Richard Hudnut, New York.

Seventeen years is a short span in the business world. Yet within this very limited period of time the American merchant often achieves astonishing success. There is a striking instance of this substantial even though rapid growth in the brief record of the development of Richard Hudnut, for the house is intimately associated with the man.

The monument which Richard Hudnut has just completed in his magnificent new business building is the most substantial evidence of the solidity of his enterprise. Costing a quarter of a million dollars, built upon a space fifty by one hundred feet (115-117 East Twenty-ninth street) and six stories high, it forms the most elaborate and complete plant for the manufacture of perfumery in the United States, if not in the world.

The executive offices are on the first floor, with the effective show-rooms in the rear. This is a model in its way, with the glass cases framed in green and gold surmounted by the gilded floral cupid which is the *motif* of all the decorations of the building.

On the second floor is the shipping room, thoroughly equipped, and back of it is the stock-room, so shut off that it can be entered only by those authorized. On the third floor are the extracts, toilet waters, cologne waters and liquid creams. On the fourth are sachet and face powders and solid creams; while the fifth and sixth floors are utilized for the extensive laboratories.

The building has just been completed, and will be open for inspection after October 1st. Visiting perfumers will see much to admire, if not to envy.

But buildings alone do not make a business. It is the business which has made this building possible. Beginning in 1889 on a small scale the progress has been steady, along the line of high grade goods, sold at fixed prices protecting the retail dealer. This has been the established policy of the house and of Richard Hudnut, for he is the business, impressing his strong personality on all departments, and pushing his goods aggressively in competition with French goods.

Hudnut has not been afraid to ask good prices, being sure that the American people would pay well, even for American made goods, if the goods were of high quality. He has made a purple violet toilet water, imitated by many; and he has expended ingenuity, taste and money on the making of attractive packages.

No expense is spared in the preparation of price-lists that are as "catchy" as the goods catalogued. And the list is as complete as that of any of the older houses in the line. The goods have a character all their own, even the names marking them as distinctive. There are the "Yanky" odors for instance, which no one could mistake as of foreign origin.

It is not necessary here to detail all the various brands made, but the line is complete in its range, including not only the usual extracts, and powders, but smelling salts, skin, tooth, hair and nail preparations, and even scented flannel.

Hudnut is perhaps most popularly known, however, for his violet waters, of which he makes a large variety. For the present holiday trade special four and eight-ounce packages of "Violet Sec" and eight-ounce packages of "Extreme Violet," have been prepared and are being sold in large quantities.

The latest novelty devised by Hudnut is a padded, satin-lined box in purple for the "Violet Sec," holding a bottle of this Toilet Water, a cake of soap, a box of face powder and package of sachet, all of this odor. For "Extreme Violet" the box is green, containing similar articles.

Another new package is a nickeled metal box for "Dentaline," a handy and very handsome receptacle for this tooth powder.

All legitimate methods for pushing these goods have been employed, even to the extent of printing the story of Mme. DuBarry in order to advertise the extract of that name.

A branch office is maintained in Chicago, on Lake street. Aggressive business methods in manufacturing and selling as well are the key-notes of the success of Richard Hudnut.

The Sovereign Manufacturing Co., of Toronto, Can., has been absorbed by Sovereign Perfumes, Limited, which is continuing the business on a larger scale, with Mr. W. D. Corson as perfumer. The prospects of the success of the new company are most flattering.

ADULTERATED OIL OF STAR-ANISE.

By JOHN C. UMNEY, F. C. S.

Star-anise and cassia oils are the most important essential oils exported from China. While impure cassia oil has been the subject of much adverse criticism in trade journals, star-anise oil (from *Illicium anisatum*), in so far as adulteration is concerned, has not been commented upon, although anise oil from aniseeds (*Pimpinella Anisum*) has been stated to have been met with containing fennel oil.

It will be remembered that in the sophistication of cassia oil colophony is used, such resin being freely soluble in the essential oil, the admixture being practically unnoticeable, and the presence of the adulterant being determined by the high residue after distillation and low percentage of cinnamic aldehyde.

So frequent was this form of adulteration, and so constant were the wranglings between importers and buyers over the purity of this oil, that three-fourths of the cassia oil now sold in London, whether at public auction or by private contract, is sold according to its content of cinnamic aldehyde.

Star-anise oil, as it reaches the port of London, has been fairly uniform in character; for this, amongst other reasons, it is, therefore, highly desirable that attention should be promptly called to any departure from this rule, especially when in a fraudulent direction.

A recent import of star-anise oil of about 600 pounds (nine cases) was found to be so varied in character that an arbitration upon its merits followed, and the brokers into whose hands a decision upon the matter was placed had no difficulty in concluding that one part of the consignment was different from the other, and might consequently be adulterated. Accordingly, I received instructions to examine and report upon samples drawn from each of the nine cases of this oil, with the following results:

PURE SAMPLES.			ADULTERATED SAMPLES.		
No.	Specific Gravity at 15° C.*	Melting-point after Solidification.	No.	Specific Gravity at 15° C.	Melting-point after Solidification.
1	.981	15.8° C.	5	.894	5.7° C.
2	.981	16.0° C.	6	.926	9.7° C.
3	.981	16.0° C.	7	.939	11.50 C.
4	.982	16.2° C.	8	.920	8.8° C.
			9	.910	7.8° C.

* The specific gravities are recorded at 15° C., as they are easily taken at that temperature, owing to the oil being readily cooled below its normal solidifying point.

It was obvious from these characters that the five samples, Nos. 5, 6, 7, 8 and 9, possessed features quite different from those of Nos. 1, 2, 3 and 4, which had all the characters of genuine star-anise oil.

Attempts were made to separate the abnormal constituent by means of alcohol of various strengths, but with only partial success. A considerable quantity of the oil, therefore, was treated with strong sulphuric acid, and the residue separated and washed. It was found to consist of a light hydrocarbon (petroleum) oil of specific gravity .835 at 15° C., the oil being by no means highly purified, but possessed of a disagreeable odor, which was slightly noticeable in the five adulterated samples.

The proportion of petroleum present varied in the different cases, and by calculation appeared to be approximately as under:

PROBABLE DEGREE OF ADULTERATION.

No. 5	56 per cent.
" 6	37 "
" 7	36 "
" 8	41 "
" 9	47 "

The recent advance in the price of star-anise oil and the active demand for this oil at this season of the year, together with the large quantities sold for delivery during the last months of the year, render it necessary that importers should be on their guard against this clumsy sophistication on the part of the Chinese.

Genuine star-anise oil should have a specific gravity of not less than .980 at 15° C., and should melt, after solidification, at a temperature not lower than 15° C.

The C. B. Woodworth Sons Company, of Rochester, N. Y., has already begun the erection of a very extensive building for its rapidly growing perfumery business. It will be built on State street, and will be thirty-five feet wide, with a depth of one hundred and thirty-five feet, and four stories high. The structure is of most approved modern material, and is to be completed by March of next year.

The Third Annual Convention of the Barbers' Supply Dealers' Association of America is being held in New York, Sept. 18, 19, 20. The Hotel Cadillac is the place of meeting.

THE LATEST RESEARCH IN ESSENTIAL OILS.

By Paul Jeancard.

The problems raised in the sphere of the Chemistry of Perfumes are becoming more and more extended. Each question is studied in all its details, and every day we find new difficulties to overcome. A problem which seemed easy a few years ago is now approached from a different point of view, and is subordinated to another, which is still more complicated. To cite but a single instance, the problem of the extraction of perfumes is actually extended to a study of the formation of the Essential Oils in the plants, or at least to a complete knowledge of the forms in which the constituents of an essential oil are found in the different organs of the plant. These questions, as will be shown below, are of extreme interest both scientifically and industrially.

I. METHODS OF ANALYSIS.

Last year we demonstrated the necessity in commercial transactions for the development of methods of analysis already being used to allow us to know quickly and with little loss of material those frauds which are so difficult to perceive in most cases, at least when they are not too gross. Unhappily the matter stands just as it did, nothing having been accomplished in this direction.

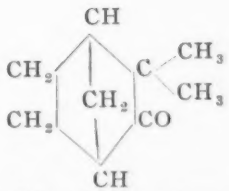
The dosage of aldehydes, ketones and tertiary alcohols is still the order of the day, as we noted in our review of the situation in 1903. On the subject of the dosage of aldehydes every year there are published several methods dependent upon the action of bisulphide of sodium on the aldehydes. Ingenious methods are offered for the dosage of small quantities of aldehydes. But all these methods, which give excellent results, according to their authors, are very quickly abandoned by those seeking exactitude chiefly.

II. THE STUDY OF THE CHEMISTRY OF CONSTITUENTS.

1. Terpenes and Sesquiterpenes.

Camphene.—The oxidation of camphene by permanganate of potassium in acetic solution, or that by dilute nitric acid, furnished in 1899 to Maievsky Camphenylone $C_{19}H_{14}O$.

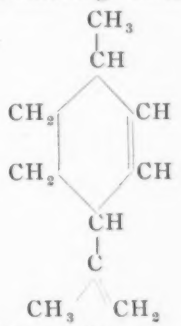
G. Wagner tried to obtain Iso-borneol by treating camphenylone:



with methyl iodide of magnesium. He did, indeed, obtain an alcohol containing the composition of Iso-borneol, but different therefrom in the fusion point.

Limonene.—We know how to transform limonene into carvone, and the modes of operation are not lacking. They consist in passing nitrous chloride of limonene into carvoxime by nitrous limonene.

Tchougaef, as we shall see, has succeeded in transforming carvone into limonene by the xanthogenic method. This method has produced limonene (optical rotation to the left) and a new carbide producing no nitrous chloride, which he calls iso-limonene and for which Tchougaef admits provisionally the following content:



Thuyene.—The xanthogenic method when applied to alcohols allows the preparation without isomerization of the corresponding non-saturated carbides. For this we treat alcoholate of sodium with carbonic sulphur, which produces alcoylxanthogenate:

$$CnHmONa + CS_2 = CnHmOCSSNa,$$

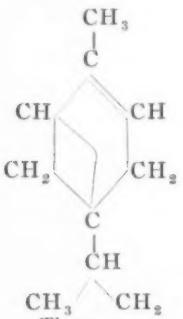
which is treated with methyl iodide to obtain methylic ether:

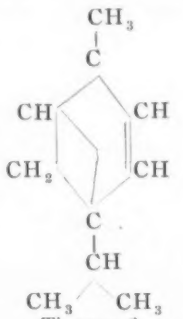
$$CnHmOCSSNa + ICH_3 = CnHmOCSSCH_3 + NaI,$$

which furnishes the non-saturated carbide, by distillation at a temperature of 150° to 200°:

$$CnHmOCSSCH_3 = CSO + CH_3SH + CnHm—1.$$

Tchougaef applied this method to thuyol prepared by a reduction of thuyone. The dry distillation of methylic ether produced two carbides $C_{10}H_{16}$, the α and β thuyenes having as content:

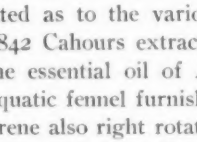

Thuyene α.

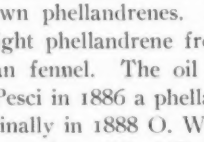

Thuyene β.

PHELLANDRENE.—Considerable confusion has existed as to the various known phellandrenes. In 1842 Cahours extracted a right phellandrene from the essential oil of American fennel. The oil of aquatic fennel furnished to Pesci in 1886 a phellandrene also right rotation. Finally in 1888 O. Wallach extracted a left phellandrene from Oil of Elemi, and from oil of Australian eucalyptus a right phellandrene.

Wallach and Beschke have taken up afresh the study of these different terpenes. They group the phellandrenes of elemi, fennel and eucalyptus under the name of phellandrene *x*, the last being the optical antipode of the other two.

The right Phellandrene of aquatic fennel is different from the preceding and should be called phellandrene β. The constituents of the two phellandrenes are as follows:


α-Phellandrene.


β-Phellandrene.

2. ALCOHOLS.

MENTHOL.—By applying the method of hydrogenation of Sabatier and Senderens to thymol L. Brunel has obtained hexahydrothymol or thymomenthol, $C_{10}H_{20}O$. Thymomenthol is a syrupous liquid with a very strong odor of menthol. It is etherified very easily, but the saponification of its ethers gives rise to a stereo-isomer of primitive thymo-menthol. In reality, this last, called thymomenthol-α, is transformed into β derivate by the action of acids. This isomerization bears only upon the alcohol function, for the two alcohols produce the same thymomenthon by oxidation. The reduction of the thymomenthon gives rise to thymomenthol β.

CALAMEON.—Thoms and Bechstroem have extracted Calameon from the essential oil of Acorus Calamus. This body is dissipated at 168°, having the properties neither of an acida phenol, an aldehyde, nor a Keton. By oxidation it gives rise to Calameonic acid, $C_{15}H_{26}O_5$. The dehydration by sulphuric acid transforms it into Calamene, $C_{15}H_{22}$.

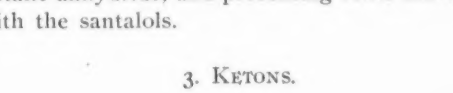
Thoms and Bechstroem believe that oxygen of Calameon is joined to two different atoms of carbon by its two powers, and is to be placed within a cyclic series.

BETULOL.—DeSoden and Elze have extracted from birch shoots a sesquiterpenic alcohol, for which they propose the name Betulol. Betulol, $C_{15}H_{24}O$, is a primary alcohol combining with phtalic anhydride, and presenting some analogies with the santalols.

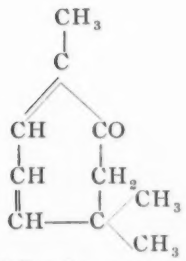
3. KETONS.

CARVONE.—By utilizing the methods of Wallach and DeBaeyer Nikitine has transformed Carvone into Carone. The reduction of this Keton by sodium in etheric solution gave him a caronic alcohol, $C_{10}H_{20}O$, which he was able to transform into Caromenthan.

Carone, when treated with iodide of methyl, according to the method of Grignard, gives rise to an alcohol, $C_{11}H_{20}O$, the constituents of which are:



EUCARVONE.—Following some new investigations Wallach rejects von Baeyer's formula for Eucarvone, replacing it by the following:



MENTHONE.—Haller has accomplished the synthesis of Menthone, taking it from Pulegone. The latter is transformed into β-methyl-cyclohexanone, which is treated with iodide of iso-propyl. The Menthone thus obtained is characterized by its different properties: transformation into menthol, preparation of oxime, of semi-carbazone, etc.

THUYONE.—Wallach has taken up again the study of the thuyones found in different essential oils. The study of their semi-carbazones has made it possible for him to characterize two thuyones (α and β) with certitude and to suggest the existence of a third. The α thuyone was that derived from oil of thuya, and the β thuyone, from oil of tansy. The oils of absinthe, sage and artemisia contain the α and β thuyones in various proportions.

UMBELLULONE.—Power and Lees have extracted from California Laurel 60% of a cyclic keton, $C_{10}H_{14}O$. Umbellulone combines with hydroxylamine and semi-carbazide in an abnormal manner, which seems to indicate that it is found accompanied by a non-saturated α, β keton.

4. PHENOLS.

We have seen that Brunel obtained thymomenthol by hydrogenizing thymol in the presence of reduced nickel.

The same method of hydrogenizing applied to carvacrol supplied the same investigator hexahydrocarvacrol, $C_{10}H_{20}O$, forming a syrupous liquid with the odor of thyme, and seeming to be a mixture of two isomeres. It should be remarked that the hydrogenizing of carvacrol is much more laborious than the hydrogenizing of thymol.

III. ESSENTIAL OILS.

1. FORMATION OF THE OILS AND PROCESSES OF EXTRACTION.

The processes of extraction of perfumes will become rational only when we know absolutely all about the various constituents of the oils in the plants. When we apply the different processes of extraction to the same flower, the products obtained do not contain the same perfume-qualities nor are they of the same chemical constitution. These variations are due to the fact that the flower is not in the same condition "towards" each process. We shall make this thought clearer by giving some examples.

In 1899 Hess and Muller separated the essential oil from Jasmin pomade, establishing the fact that this oil contained about 65% of acetate of benzyl. At the same time we showed that oil of Jasmin prepared by solvents or by steam-distillation contain but 35% of acetate of benzyl. The oil derived from the pomade has a specific gravity of 1.015, while that from the other process is .914 to .920. These experiments and others analogous to them have been made over and over again, and it was always found that the essential oil obtained by enfleurage contained almost twice as much acetate as the oil obtained by solvents.

In the same way, the tuberose gave forth .067% of oil by extraction and .800 by enfleurage. Last year we showed the childishness of the conception that the flower lives after it is placed in the frame.

Bourquelot and Herissey have proved that the essential oil does not pre-exist in the root of the blood root plant; it is produced by the developing of a glucoside (geine), by an enzyme (gease) and eugenol is the prevailing aromatic principle of the oil.

The acetate of benzyl in the jasmin, the anthranilate of methyl in the tuberose, the eugenol in the blood root, the benzaldehyde in the bitter almond, etc., are to be found scattered all through the plant from the root to the fruit, in the form of combinations which the catalytic agents, whether diastases or others, develope.

The conclusion forced upon us is the following: the essential oil as such does not exist in the vegetable cells. Its different constituents are scattered here and there either in a free state, or in complex combinations. Just in the proportion in which these elements are decomposed by the processes of extraction is the oil obtained more or less rich in these constituents. Thus, during enfleurage the acetate of benzyl which is found in a complex state in the jasmin blossom is set free by the action of the enzymes. On the contrary, in the extraction by solvents, the decomposition of the complex is little or nothing. It is certainly nothing and the acetate of benzyl found develops from the partial decomposition which takes place in transit from field to factory.

The precise knowledge of the forms in which the constituents are found in the plants is indispensable to the essential oil merchant. This knowl-

edge is intimately connected with that of the formation of the oils, and for this reason we cite some recent works on these questions of vegetable physiology.

Bourquelot and Danjon have extracted from elder flowers, *Sambucus nigra*, sambunigrine, a cyanhydric glucoside developed by hydrolysis in cyanhydric acid, glucose and benzaldehyde.

The cyanhydric glucosides are probably more widespread than is generally supposed. Cyanhydric acid must have a very important physiological role, for its presence has been proved in a large number of families. According to Thabuis cyanhydric acid arises from the action of alkalis either upon formaldoxime or on trioximidomethylene; this last formed by means of hydroxylamine and formic acid.

Guignard has published a lengthy study of the separation of cyanhydric acid in elder flowers. The fresh leaves contain a large amount of this acid; the buds while developing also contain a large quantity. In all other parts of the plant, it is found only as a trace. The cyanhydric glucoside does not move about, and, according to Guignard, it is not a reserve-substance in the same sense as the other hydrates of carbon.

Guignard has found emulsine in the roots of orchids, native and exotic, while the leaves have hardly any at all. Is vanillin developed by oxidation from a glucoside, as Lecomte thinks?

Nicloux has shown that cytoplasm constitutes the active principle of castor oil seeds, and that it is endued with lipolytic power to the exclusion of all the other cellular elements. It is more than probable that the cytoplasm is nothing more than the support of the lipolytic agent, which is not soluble in water and which Nicloux calls lipaseidine.

These facts prove that the problem of the formation of the essential oils, when taken in connection with the special problem of the study of processes of extraction of odors, is divisible into three parts. We must know in what shape and in which parts of the plant the constituents of the essential oil are to be found, which will suggest the best process applicable for extraction, and the preliminary treatment to which the vegetable organs are to be subjected before applying the fitting process of extraction. The evolution of these complex combinations, and the consequent development of the constituents in the course of the life of the plant make it possible to know the very best time to cut and gather it. Finally, the study of external influences (climatic conditions, fertilization, height, various precautions in culture), show the transformations taking place in the plant on account of variations in temperature, humidity, fertilization, etc.

A priori, the climatic conditions are of great interest, as well for the scholar as for the manufacturer. The diastasic activities follow the temperature; humidity influences the solubility of the salts. From the manufacturing point of view the exact knowledge of these factors makes it possible to estimate the probable value of the crop.

For the last five years we have been studying the influence of atmospheric changes upon the formation of essential oils. Our method is as follows: To obtain each essential oil we distill daily considerable quantities of flowers and twigs. We draw off a sample from the total mass of essential oil obtained each week. On account of the quantity used we are certain of obtaining an average sample of the essential oil produced that week by plants of the same age, of the same quality, and growing on the same soil. When we compare the constituents of these different samples with the meteorological observations taken daily, we have a right to draw certain legitimate conclusions.

We sum up here briefly the observations made during 1904 and 1905.

Here are the figures bearing on Oil Neroli:

Weeks.	1904.				1805.			
	Optical Rotation.	Minimum Temperature Average.	Index of Saponific.	Index of Saponific after Acetylation.	Optical Rotation.	Minimum Temperature Average.	Index of Saponific.	Index of Saponific after Acetylation.
1st.....	+ 2°.20	12°	28	121.8	+ 2°.30	11°.6	46.2	149.1
2nd	+ 4°	10°.8	35	118.3	+ 3°	13°.8	44.1	154
3rd.....	+ 5°.28	12°.2	31.5	124.6	+ 3°.20	15°.5	37.1	147
4th	+ 6°.30	17°.5	28	125.3	+ 4°.50	15°.6	28.7	137.2

The fourth week of 1905 was very rainy as compared with the others.

From these figures it results: when the temperature of the night is low, the index of saponification is high. When the temperature at night is high there is always, with the exception of rainy days, a corresponding increase in the amount of free alcohol, a quantity which is proportional to the difference of the two indices. It is to be noted that the rotatory power becomes more and more dextra as the growth advances.

For petit grain the conclusions are the same, as the following figures show:

Weeks.	Optical Rot.	Minim. Temp.	Index Saponif.	Index Sap. Acetyl.
1st	— 2°	16°.8	142.1	200
2nd.	— 5°	21°.5	109.9	191

The observations made on Geranium have confirmed our earlier study of this essential oil, to the effect: a diminution of the temperature at night brings about a corresponding relative increase of citronellol:

Weeks.	Minim. Temp.	Total Alcohols, Per Cent.	Alcoholic Portion.	
			Citronellol, Per Cent.	Geraniol, Per Cent.
1st	16°.5	72.66	59	41
2nd.	17°.3	72.10	56.35	43.65
3rd	16°.4	69.90	59.58	40.42
4th	11°	68.50	63.22	36.78

It would be interesting to study the influence of variations of light, electric power, etc. It is not because we cannot measure it that it is passed over in silence. As Bancroft, of the Chemical Section of Philadelphia, says: "In those problems related to chemical equilibrium we must face the theory of catalytic agents which intervene in vegetable chemistry. If in nature plants have at their disposition only air, water and some mineral salts, there are, nevertheless, some remarkable catalytic agents, of which it is necessary to take account: heat, light, potential variation, enzymes, living protoplasma."

2. Constituents and Composition of Essential Oils.

Below are indicated briefly some new constituents determined for some of the essential oils; the names of the authors of the works are in parentheses:

Carvi.—Bihydro-carvone, bihydro-carvol, and a base with a narcotic odor. (Schimmel.)

Eucalyptus.—The last part of Eucalyptus Globulus contains an alcohol, $C_{10}H_{16}O$, with properties closely allied to pino carveol, obtained synthetically by Wallach. (Schimmel.)

Fennel Water.—Contains an aldehyde, $C_{10}H_{16}O$, phellandral or tetrahydro-cuminic aldehyde. (Schimmel.)

Ginger.—Camphene, phellandrene, zingibrene, borneol, cineol, citrol. (Schimmel.)

Gingergrass.—Dipentene, phellandrene d, limonen d, dihydro-cuminic alcohol. (Walbaum & Huthig.)

Lavender.—The firm of Schimmel, in its distillery at Barrème, has obtained oils of lavender containing as much as 52% ester. It would be interesting to know the other constituents of these oils. This ester figure shows how important it is to conduct the distillation for the constituents of the oil. Until now, with rudimentary apparatus, and without scientific principles, we have never obtained oils of lavender containing more than 40% ester.

Matico.—Oil from the leaves contains: cineol, 10% of asarone and "camphor" of Matico, $C_{15}H_{26}O$. (H. Thoms.)

Oriental Rose.—5 to 10% of nerol, 1% of sesquiterpenic alcohol and 1% eugenol. (H. de-Soden & W. Treeff.)

In the accompanying table we give the constituents of the Essential Oils as studied during 1905.

Essences.	Remarks.	Specific Gravity.	Optical Rotation.	Indices of Saponification.		Constituents.	Authors of Works.
				Before Acetylation.	After Acetylation.		
Ambrette	By steam distillation from seed of Martinique	0.9010 at 22°.5	+ 1°.12	203.7	228.9	Point of fusion : + 16°.5. 18% of free palmitic acid. Production, 4.3%. Betulol, 44%.	Jeancard & Satie. De Soden & Elze.
Birch	Essence of buds	0.975 " 15°	— 2°	67.2	177.8		
Camphor	From Laurus Camphora, cultivated at Cannes, constituents of eleoptene	0.9384 " 15°	+ 30°.30	25.2	53.9		Jeancard & Satie.
		0.9500 " 15°		106.4	149.1		" "
Hemlock	Distillation of roots					30% of benzyl acetate.	" "
Jasmin	Quintessence 1905, flowers of Cannes	0.9290 " 15°	+ 1°	112	198.1		
"	Quintessence 1905, extraction from moist flowers	0.9210 " 15°	+ 1°.40	88.9	196	23.81% of benzyl acetate. 70% of citral.	" "
		0.9206 " 15°	0°				
Lemongrass	From Seychelles					Soluble in one part of alcohol at 80°.	" "
Niaouli	From Melaleuca Viridiflora, New Caledonia	0.9222 " 15°	— 1°	3.5	35		
Orange	Quintessence 1905, flowers of Cannes	0.9218 " 15°	+ 21°.8	84.7	182	29% ester. Linalol, geraniol, 24% of citral.	G. Litterer.
Petit grain (citrus)	From Citrus Limonum	0.8824 " 15°	+ 56°.46	12	54	60% of terpenes (camphene d. and limonene), 4% of citral, 20% of alcohols (geraniol and linalol d.).	
Petit grain (sweet)	From Citrus Aurantium Risso	0.8603 " 15°					"
Rose	Quintessence, flowers of Cannes, 1905	0.9820 " 15°	+ 15°.50	36.4	229.6	32.6% of citronnellol.	Jeancard & Satie.
"	Quintessence, flowers of Cannes, 1905	0.9840 " 15°	+ 13°	32.9	240.1	35% of citronnellol.	" "
		0.9176 " 15°	+ 45°	21	32.2		
Tansy	Egypt					69% of total alcohols.	" "
Tuberose	Quintessence, 1905, flowers of Cannes	0.9156 " 15°		103.6	212.8	60% of citral soluble in one part of alcohol at 80°.	" "
Verbena	From Guadeloupe	0.8908 " 15°	— 2°.50				

THE PEPPERMINT COMBINATION.

During last month the following call to the Peppermint Growers of Michigan was sent out:

"As all classes, except farmers, are organized for protection we believe all branches of farmers should be, and inasmuch as the organization known as the American Society of Equity proves to be successful, we, essential oil growers, organize in this society and submit the following for your approval.

"Name of the society:—The American Society of Equity, Essential Oil Department.

"We, essential oil growers, join ourselves together for the purpose of securing profitable prices for our product, and protection.

"That we advise an acreage and crop report from all mint growing districts, by reliable reporters in this society, mode of selection of reporters and kind of report to be determined. Also officers and duties to be designated.

"When distillating is done and crop report in, we deem it advisable for a board of directors to fix a minimum or lowest price, if possible all to get that price. Some provision to be made for those who cannot hold for the price (minimum). And as, we believe, essential oils are adulterated, much to the detriment of growers, this should receive the attention of this body. And, as we believe, these hindrances can only be removed by all branches of farmers holding together as one man.

"For this reason it is deemed advisable that all branches of farmers should be organized under one general head, in one solid body, for equitable prices for all farm products.

"We advise also in case of too great a surplus of oil that the acreage should be diminished and encourage other crops instead, thus balancing crops and prices.

"That crop reports are the property of members only and that those who derive benefits from this organization should be members and help bear the expenses.

"That we meet in the Unions of this society, but, if advisable, mint growers to have separate meetings for their particular business.

"That we adopt for our official paper 'Up-to-date Farming,' and give all branches of the society our hearty support and co-operation.

"That we propose a convention of mint growers, possibly at the same time of the potato and fruit growers, to formulate the mint growers' branch of the A. S. of E. and elect officers and attend to whatever business may come before the convention.

"Do you favor this or a similar plan? Kindly advise The American Society of Equity.

"GER. C. WATTLES, Organizer."

As a result the meeting was held in Kalamazoo, beginning on the fifth of this month. It was claimed by the "Organizer" that fifty growers were present representing 90% of the acreage. Other reports have it that the number taking any part in the convention were only a dozen, and these not the largest producers. Mr. Wattles presided, stating:

"This gathering of the producers of peppermint and other essential oils is for purposes of getting a correct line on the situation, so that we may establish an equitable minimum or market price for our products. It is not an attempt to foist high prices on the consumers, or to corner the market, *a la* trust.

"The crop this year is about 75 per cent. of that of last year. We are now being paid from $1.85 to $2.10 a pound, while the buyers are selling the same product to the consumer for from $3 to $4.50. The cheaper grades are adulterated at that. We believe that the middleman is getting more than his just share of the profits. We must do business on business principles, as other classes do."

The result of the meeting so far as made public was, that the growers agreed to try to secure from $2.75 to $3 per pound for this year's Oil of Peppermint. This was not, however, done as a fixed agreement, in order to avoid prosecution by State and Federal officers. Those who will be at the helm of this new organization are: President, Thomas J. T. Bolt, of Ravenna; Vice-President, L. E. Dufer, of Sherwood. Directors, George Martin, of Vicksburg; George C. Wattles, of Sherwood; L. M. Adams, of Decatur; Jerry R. Woodward, of Mishawaka, Ind., and Ralph C. Leverich, of Fennville.

Whether this body will really be able to control the price of peppermint remains to be seen.

That perfumes exercise a powerful influence upon the nervous system has been long recognized as a fact, but it has remained for a Paris physician to devise a method of treating patients with different perfumes. He claims that geranium gives audacity and self-confidence, mint a clear business head, opponax tends to unsettle the mind, Russia leather encourages indolence, verbena inclines to art and violet impels devotion. If you don't believe it, try it!

CLOVES.

By A Leading New York Authority.

The last few years have seen a tremendous increase in the demand for cloves and clove oil. At present the price is extremely high, on account of the very large demand and speculation, so that it is a moot question, "Whence are we to get all the cloves that will soon be needed?"

The history of cloves runs back to at least two centuries B. C., when this spice was well known in China, and in the Far East generally. It was then used as a condiment, and later was introduced into the domain of medicine, as well as that of perfumery.

In our day cloves are used as a flavoring ingredient, by the druggist, by the soap-maker, and extensively in the manufacture of vanillin.

The modern history of cloves begins with the Sixteenth Century, when the Portuguese reached the "Spice Islands," and brought home the spices and an accurate account of their cultivation. When the Dutch conquered the Portuguese and drove them out of the Moluccas, they tried to keep the clove industry in their own hands. But the French managed to smuggle out some of the shoots and planted them first on the Islands of Bourbon and Mauritius, and by the end of the Eighteenth Century on the Island of Zanzibar, whence the best cloves come at the present time. In fact the principal source of cloves now is Zanzibar and the neighboring Pemba. The plantations are entirely in the hands of the Arabs, and the labor is chiefly a barely concealed slave-labor. Some of the plantations contain from 10,000 to 15,000 trees, requiring the labor of 120 to 130 laborers, who water and tend the young trees carefully, working over the soil between the trees and keeping down the weeds. There is no small science necessary for the successful growing of cloves, for first the seed must be selected, planted in a long trench and well watered until after sprouting. Thirty or forty days are required for the shoots to appear above ground. Constant care and judicious watering and tending are required for two years, when the plants should be about three feet tall. Then it is necessary to transplant them, and they are usually planted in rows, and set about thirty feet apart. Constant tendance is still necessary, with careful watering until well rooted. Thenceforward the trees need only ordinary care and a little working around the roots, keeping the weeds down. The trees grow quite slowly, five or six years being required before they are as large as our pear trees and begin to bear. The clove of commerce is actually the bud of the tree, which is at first white, then green and finally red, when it is considered ripe for gathering. The best cloves are large, dark, brittle, and exude oil on being scratched. The harvesting continues at intervals for six months, the first full crop appearing at the close of the rainy season. The limbs of the trees are very brittle, and, as it would not do to risk breaking the branches, movable platforms are used for gathering the buds by hand. After being gathered the buds are spread out in the sun until cured, then assuming the familiar brown color. A good tree ten years old produces about twenty pounds of clove-buds in a season. This yield increases annually until when the tree is twenty years old, it yields a hundred pounds of buds or more. This makes a plantation of clove-trees a large revenue producer. The small stems are also gathered, selling usually for one-fifth the market price of the buds, as they have about one-fifth the flavor of the bud. Ground cloves sell at a lower price than whole buds, because the stems are mixed with buds and all ground together.

The cloves coming from the Island of Zanzibar are considered best, because they are well cured, but those grown on the Island of Pemba are just as fine, and when cured properly command a good price. The Amboyna cloves produced in the Straits Settlements are the choicest selection, but except as a fancy article may be considered a negligible quantity.

These islands belong to the Sultan of Turkey, and a large part of his income is derived from the export duty on cloves. There is a fixed duty of 30% ad valorem, and, as the value of the cloves exported annually amounts to some $1,600,000, the Sultan's revenue therefrom is upwards of half a million dollars a year.

Following is the latest report on the clove industry of Zanzibar made by the British vice-consul:

The 1904-5 season's crop of cloves was the largest of which any official record exists, amounting to 227,178 cwts. (755,543 frasilas).

The Island of Pemba produced the greater part of this—675,683 frasilas, as against 79,860 frasilas from Zanzibar.

As might have been expected, the following sea-

son, 1905-6, was the poor one for Pemba; Zanzibar, however, furnished more than the average crop, but, owing to a large quantity of this season's cloves being unsold at the end of 1905, the figures given below do not include them.

The price which at the beginning of 1905 was, for Zanzibar cloves, 11s. 4d. per frasila, remained steady until May, when it rose to 12s. 8d., reached 15s. 4d. in July and 18s. 8d. in August; prices declined to 16s. 4d. in September and closed in December at about 16s. The average for the year was for Zanzibar cloves 14s. 5½d., and for Pemba cloves 13s. 5½d. per frasila. The fluctuations were principally caused by the operations of speculative syndicates in the United Kingdom and in India.

Of the total value of £287,073 exported in 1905 the following amounts went to:

Country.	Value 1905.	Value 1904.
United Kingdom	£54,709	£119,913
British India	132,236	98,454
Netherlands	36,992	24,866
United States of America	32,735	47,651
Germany	12,089	9,221
France	3,615	16,274
Austria-Hungary	2,573	3,944

CROPS DURING PAST DECADE.

Year.	Quantity Zanzibar, Frasilas.*	Pemba, Frasilas.*	Total, Frasilas.*
1896	119,791	237,090	356,881
1897	90,676	240,954	331,630
1898	60,364	308,486	368,850
1899	139,320	344,765	484,085
1900	49,180	248,936	298,116
1901	49,977	294,709	344,686
1902	58,438	235,107	298,545
1903	146,308	172,811	319,119
1904	36,550	387,847	424,397
1905	91,449	374,893	466,342

* One frasila equals 85 lbs.

These figures are somewhat misleading, however, for dealers are accustomed to keeping the record of importation of cloves from September 1st to August 31st, and according to this method the following are the exact figures as recorded by the best authorities:

1899-1900	63,850	bales of 140 lbs. each.
1900-1901	56,143	" " " " "
1901-1902	87,620	" " " " "
1902-1903	105,675	" " " " "
1903-1904	32,433	" " " " "
1904-1905	196,225	" " " " "
1905-1906 (estimated)	40,000	" " " " "

According to this record the estimate of the crop for the current year makes it only a little larger than that of 1903-1904, but the stock on hand from the very abundant crop of last year, the largest on record, plays no small part in the visible supply of cloves.

THE CONTUMACIOUS PERFUMER.

By Louis Reeves Harrison.

He first drew attention at a national convention. When the Manufacturing Purfumers of this country met together for the purpose of forming an association; the assemblage proved to be an interesting one for the student of human nature, as it fairly bristled with antithetical characters. Each Contumacious Perfumer present had long worshiped at the shrine of his own convictions; was quite as bitter as the church in his attitude toward dissenters, and came to this heterogeneous gathering prepared to protect his cherished opinions from the heresies of others and even shield them if necessary from the chilling blasts of controversy.

At the first informal convention it became apparent to those who inaugurated the movement that great care and patience must be exercised, not only to reconcile interests at variance, not even to attempt mercantile concord, but simply to establish a unity of purpose and action whenever and wherever injurious legislative acts menaced the safe conduct of the perfume trade throughout the country.

In the more formal congress held at Delmonico's, where a constitution was adopted, it was clearly pointed out that the association was in spirit a defensive alliance, intended to protect the perfume industry as a whole, but there the Contumacious Perfumer was even more in evidence. He did not come out in open rebellion against the authority of the convention; but during the progress of its work he aired his views with small regard for the opinions of his fellows. Those who had attended assemblies convoked for similar purposes in other lines of trade could not fail to notice the prevalence of contumacy in their own. The Contumacious Perfumer is the darling of his own contemplation.

The Contumacious Perfumer has invited the severe criticisms made by the trade in general, but there are a number of houses engaged in the business of making perfumes on American soil who cannot be included in censure so sweeping. These perfumers are, as a rule, well established, maintain an even high standard of quality in their product, and hold their ground by persistent and thorough business methods. They are, as far as home trade is concerned, the classics. Many of their factories are models so far as equipment, method and neatness are concerned, their office and distributive work will compare favorably with that of any other line,

and no doubt exists in the minds of those familiar with the subject that there are brains and business ability a-plenty and to spare among the Classics. Even among them, however, there may be found a streak of obstinacy hovering between inoffensive conservatism and unprogressive contumacy, which interferes with careful investigation of the rapid developments in the perfume art.

As for the Contumacious Formula Fiend, who has drawn upon the trade in general so much censure, his case is hopeless. He is too busy distributing opinions to acquire knowledge. In one way or another, no matter how, he gets a formula. It may be for some one of those weird compositions called "Violet," more generally known as "What is it?" This formula may have been the by-product of some sad-brained chemist or given as a bonus with a consignment of rancid pomades, but by some illusive process, known only to the Contumacious Perfumer, it becomes a priceless treasure. Into the secret archives it goes while its possessor sits gloating in secret over the wonderful endowment of genius which enables him to acquire by intuition, so to speak, what others can learn only by observation and experience. In a day he has possessed himself of knowledge which American Classics and French Masters need years to acquire.

Bright shines his halo of eminence as complacently he regards his physiognomy in the glass of self-approval. Immortal will be his name when placarded in nine colors and gold upon every column in the Hall of Fame. Before this masterpiece is launched upon the uncertain seas of trade it must have an original name, so in a moment of plaintive sweetness he calls it "Wilted Violets." During the day he thinks that "shrivelled" might have been more unique. At night, when all is silent the Contumacious Perfumer turns the flashlight of his imagination upon his repertoire of table d'hôte French and cigar label Spanish and in that inspired moment evolves the patrician pseudonym "Violette de Capidura."

[The fate of the C. P. is suggested in the following.—Ed.]

SENTENCED TO LIVE.

He never was at all afraid
Of any trade where money's made;
But I confess
He's in distress;
He's in a stress
Of business;
And never yet a cent it's paid,
Poor fellow's in the perfume trade.
It is a rumor,
He'll die a perfumer.
He could, before he dropped a peg,
Tame a horse or poach an egg;
It's now too late
To abdicate—
Alas! his fate,
I predicate,
When everyone has pulled his leg,
Within a year he'll have to beg.
It's gloom-er
To be a perfumer.
He couldn't make the business pay,
And tried to die without delay;
The noose was slack,
His soul came back;
Alas! alack!
The same old track;
He has to follow night and day,
He couldn't die, there is no way;
Only tumor
Kills a perfumer.

The post-card as an advertising medium is growing daily in importance. But it is important for the judicious advertiser to select his cards well, and have them artistically executed, so that they may survive the great mass of cheap, trashy cards. One of the most striking novelties of the kind is the Fan-post-card, which may be made to hold any number of views or pictures up to eight. Advertise strikingly when you advertise at all! What better advertisement can you send to your customers than an artistic card, which they will keep on account of its beauty?

Or you may want to send out a scented post-card as a sample of some new odor. Nothing is so convincing as the scent itself. You need cards especially designed for this purpose.

If you want these cards made properly, so that you may be sure of results, consult The Valentine & Sons Pub. Co. They will submit designs, or use those you select. You will then have a permanent and attractive novelty to send to your customers. The circular will go into the waste basket, but these cards will be passed around and must keep your name before the public.

THE RELATIONS BETWEEN STRUCTURE AND SMELL IN ORGANIC COMPOUNDS.[1]

By GERTRUD WOKER.

The first essential for a smell is, of course, the volatility of a substance. Structural peculiarities and external conditions, which increase the volatility, increase the smell also as a rule. Although the substances with an odor vary very much in their chemical constitution, an examination shows that the large majority of them are unsaturated compounds and that the character of the odor varies with the degree of saturation. Very few substances, containing a triple bond, have a pleasant odor, though propargyl and diacetylene dicarboxylic ester do. In general, substances with a triple bond act so strongly on the nasal passages, and often on the bronchial tubes, that an unpleasantly stifling sensation is caused.

On the other hand, the presence of a double bond is often accompanied by a pleasant odor, as can be seen from the instances[2] in Table I.

TABLE I.

Name.	Smell.	
Acetacetic ester	Fruity	Liquid
α-Methyl-β-oxyacrylic ester	Pleasant	"
Methyl malonate	Ethereal	"
Ethyl malonate	Aromatic	"
Ethyl oxalate	Spicy	"
Nitric ester	Pleasant	"
Nitroparaffine	"	Solid
Acetonylacetone	"	Liquid
Mesityl oxide	Like peppermint	"
Methyl heptenone	Ethereal	"
Tropylene	Like benzaldehyde	"
Dihydrobenzoic acid	Like cinnamon	Crystals volatile with steam
Δ_2-Tetrahydrobenzoic acid	Like valerian	Liquid
Cantharene	Like terpenes	"
Dihydro-p-xylene	" "	"
l-Limonene	Like lemons	"
Inactive limonene	Pleasant	"
Pinene	Characteristic	"
d + l-Dihydrocarveol	Like terpinol	"
Terpinol	Pleasant	"
Tetrahydrocarvone	Like carvone	"
α-Furfurol	Aromatic	"
Furfuracrylic acid	Spicy	Needles
α-Thiophene aldehyde	Like benzaldehyde	Liquid
Geraniol	Pleasant	"
Linalool	"	"
Citronellal	"	"
Citral	Very pleasant	"
Pseudo-ionone	" "	"

[1] Translated from the author's German manuscript by W. D. Bancroft, for "The Journal of Physical Chemistry," Cornell University.

[2] The instances cited throughout this paper are taken from Krafft's "Lehrbuch der organischen Chemie."

Double bonds are also to be found in ionone, the artificial violet perfume; in irone from the violet roots; and in their derivatives, ionene and irene.

Compounds, containing a benzene ring, show an increase in the smell, especially when the phenyl radical is also connected with a double bond.

TABLE II.

Name.	Smell.	
Phenol	Peculiar	Crystals
Naphthol	Like phenol	Leaflets
o-Chlorphenol	Unpleasant	Liquid
Thymol	Like thyme	Prisms
Creosol	Pleasantly aromatic	Liquid
Mesitylene	Aromatic	"
Cymol	Peculiar aromatic	"
Monochlor-benzene	Aromatic	"
Benzyl chloride	Stifling	"
Diphenyl-methane	Like oranges	Crystals
as-Diphenyl-ethane	Pleasant	Liquids
Tetra-hydronaphthalene	Like naphthalene	"
Nitrobenzene	Like benzaldehyde	"
Benzaldehyde	" "	"
o-Tolulaldehyde	" "	"
m- "	" "	"
p- "	Peppery	"
Cumine aldehyde	Like cumine	"
Salicylic aldehyde	Peculiar	"
Vanilline	Like vanilla	Needles
Piperonal	Like heliotrope	Leaves
Cinnamic alcohol	Like hyacinth	Needles
α-Chlorstyrol	" "	Liquid
Eugenol	Like pinks, intense	"
Cumarine	Pleasant	Prisms

If the number of double bonds in a compound is increased beyond measure, the effect becomes similar to that of a triple bond. Instead of a plain increase in the intensity of the smell, there is a marked deterioration in the quality, accompanied by unpleasant irritating effects. Instances of this are given in Table III.

TABLE III.

Name.	Smell.	
Acid anhydrides	Stifling	Liquid
Oxymethylene ketone	Penetrating	"
Dihydrobenzaldehyde	Stifling sweetish	"
Quinone	Like ozone	Volatile prisms
Toluquinone	Like quinone	Leaflets
p-Oxyloquinone	" "	Needles
Quinone chlorimide	" "	Volatile crystals
α-Naphthoquinone	" "	Plates

The quinones have four connected pairs of atoms each with a double bond. From the work of Witt,

Liebermann, and v. Kostanecki it appears that the color of a substance and the presence of double bonds are connected in such a way that a substance is more intensely colored the more double bonds there are. Now it is remarkable that pairs of atoms with double bonds, "chromophoric groups," also play an important part in the case of odoriferous substances and that the increase of chromophoric groups in the molecule, *i. e.*, the presence of "complex chromophores," causes not only an increase in the color but often an increase in the smell. This surprising relation is especially evident in quinone where the double occurrence in series of the complex chromophore O:C.C:C is the cause of the color and the smell.

The effect of the double bond on the smell is best seen by a comparison of the saturated compounds with the corresponding unsaturated compounds (Table IV).

TABLE IV.

C.C	C:C	C:C
Ethane, odorless	Ethylene, faint smell	Acetylene, strong unpleasant smell
Propane, odorless		Allylene, unpleasant smell
Butane, odorless		Ethyl acetylene, strong smell
		Dimethyl acetylene, peculiar smell
		Diacetylene, peculiar smell
Hexane, faint ethereal smell	Diallyl, odor of horse radish	Dipropargyl, strong smell
Propyl alcohol, ethereal smell	Allyl alcohol, pungent smell	
Propyl iodode, pleasant ethereal odor	Allyl iodode, garlic-like odor	
Propyl aldehyde, stifling odor	Acroleine, extremely irritating odor	Propargyl aldehyde worse than acroleine
Isopropyl alcohol, alcoholic smell	Acetone, characteristic smell	
Propionic acid, stifling smell	Acrylic acid, stifling acid smell	Propiolic acid, stifling acid smell

C.O	C:O
Butyl alcohol, peculiar smell	Butyl aldhyde, stifling odor
Isobutyl alcohol, peculiar smell	*n*-Butyric acid, most repulsive smell
	Isobutyric acid, disgusting repulsive smell
Iso-amyl alcohol, peculiar smell	Isovalerianic acid, most disgusting smell
Ethel alcohol, alcoholic odor	Acetic acid, pungent smell
	Acetaldehyde, etheral but stifling odor
Methyl alcohol	Formaldehyde, stifling smell
	Formic acid, pungent smell

C:C.C:O
Crotonaldehyde, odor stifling

C.N	C:N
Methylamine, ammoniacal smell	Prussic acid, most stifling odor
Ethylene diamine, ammoniacal smell	Cyanogen, intense odor
Dimethylamine ammoniacal smell	Methyl carbylamine, frightful and disgusting odor.

From these data it appears that a substance has a more intense smell, the more double or triple bonds it has, or, in other words, the greater the internal tension. Two double bonds on the same carbon atom usually increase the smell of a substance more than a triple and a single bond. This can be seen from a comparison of the isocyanic esters with the normal esters (Table V).

TABLE V.

Name.	Smell
Normal cyanic esters	Ethereal smelling
Ioscyanic esters	Unpleasant smelling, penetrating
Thiocyanic esters	Like garlic
Isothiocyanic esters	Stifling and irritating

If oxygen is replaced by sulphur, the smell becomes more marked and less pleasant (Table VI).

TABLE VI.

Name	Smell
Methyl alcohol	Peculiar smell
Methyl mercaptane	Disgusting smell
Ethyl alcohol	Alcoholic smell
Ethyl mercaptane	Most disgusting smell
Phenol	Peculiar smell
Phenyl mercaptane	Intense smell of garlic
Benzyl alcohol	Aromatic smell
Benzyl mercaptane	Garlic-like smell
Acetone	Characteristic smell
Thio-acetone	Unbearable odor
Acetaldehyde.	Peculiar ethereal and stifling
Thio-acetaldehyde	Very penetrating odor
Ethyl ether	Ethereal odor
Ethyl sulphide	Disgusting odor
Vinyl ether	Ethereal odor
Vinyl sulphide	Disgusting smell
Phenyl oxide	Odor like geraniums
Phenyl sulphide	Not unpleasant odor
Acetic acid	Pungent odor
Thio-acetic acid	Unpleasant, stifling odor
Carbon dioxide	Odorless
Carbonyl sulphide	Faint smell
Cardon bisulphide	Ethereal smell

Formaldehyde, thioformaldehyde, acetaldehyde and thioacetaldehyde all form odorless polymerization products having three times the molecular weight of the original substance. Since this condensation involves a disappearance of the double bonds, this is an additional proof of the great effect of the double bonds on the smell of a substance. Another instance of this is the polymerization of the volatile and stifling smelling cyanic acid, O:C:NH to the odorless cyanuric acid.

A compound can be unsaturated even when there is no double or triple bond, as for instance when an element does not show its maximum valence. Such compounds have the power of forming addition products just as much as substances containing multiple bonds. As a matter of fact it is hard to draw a hard and fast line between an unsaturated atom and one that is connected with others by double bonds. It seems to me quite indifferent whether one speaks of a carbon atom with a double or triple bond or whether one says that the carbon atom is trivalent or bivalent. The two are different ways of expressing the same fact, that the substance is unsaturated at ordinary temperatures.[1]

Nitrogen is the most important of the elements which may have the same effect on a molecule as the presence of an atomic group with multiple bonds. Thus nitrogen is trivalent in the following compounds, all of which have characteristic smells: ammonia, methylamine, ethylamine, trimethylamine, ethoxyethylamine, *p*-diamidohexamethylene, dimethylene imine, trimethylene imine, pyrrolidine, α, α-dimethylpyrrolidine, piperidine, α-methylpiperidine, α, α-dimethlpiperidine. In a large number of nitrogenous substances we find the occurrence of a multiple bond in addition to trivalent nitrogen. This combination increases the intensity of the smell and often makes its quality worse, just as was the case when many multiple bonds were present in the molecule.

The following instances have already been referred to:

Prussic acid, its normal and iso derivatives.

Cyanic acid, its normal and iso derivatives.

Sulphocyanic acid, its normal and iso derivatives.

Cyanogen, chlorcyanogen, quinone chlorimide.

[1] If the temperature is raised, unsaturated compounds become saturated, *i. e.*, the power of forming addition compounds decreases. It is a well-known fact that acetylene is stable at high temperatures even in an atmosphere of hydrogen, in which it can be formed by the action of the arc. At high temperatures therefore it behaves like a saturated compound which cannot add on any other elements, and there is therefore no sense in writing the formula for acetylene under these conditions with a triple bond, since it has no longer any of the properties which are characteristic of the triple bond.

The following substances in Table VII come under the same head:

TABLE VII.

Name.	Smell.
Cyanogen sulphide	Alkyl thionylamines
Acetamide	Diacetone amine
Allyl amine	δ-Propyl-δ-aminovaleraldehyde
Chlor-formamide	Trimethyl isoxazol
Alkyl nitrites	α-Pyrrolidon
α,α'-Methyl pyrrolidon	Pyrrol
Pyrroline	Pyrazol
Methyl glyoxaline	Osotriazol
Triazol	Pyridine
α-Vinyl pyridine	α-Chlorpyridine
β-Ethyl pyridine	α,α-Dimethyl pyridine
β,β-Dimethyl pyridine	Aldehydine
Nitrospiperidine	Nicotine
Tropidine	Ketazines
Pyrazine and pyrazine derivatives	Pyrimidine and pyrimidine derivatives
Hydronitric acid	

The combination of unsaturated nitrogen atoms with phenyl or naphthalene radicals causes an increase in the intensity of the smell similar to that caused by the union of atoms with a multiple bond to a phenyl radical. Instances of this are aniline, methylaniline, hydrazobenzene, benzonitrile, diphenylamine, phenylhydrazine, nitrobenzene α-naphthylamine, *ar*-tetrahydro-α-naphthylamine, *ar*-tetrahydro-β-naphthylamine, *ac*-tetrahydro-α-naphthylamine, *ac*-tetrahydro-β-naphthylamine.

We may also have the combination of trivalent nitrogen, phenyl radicals, and multiple bonds. It is to be expected that such compounds would have a very intense, usually unpleasant smell. The instances given in Table VIII show that this is true.

TABLE VIII.

Name.	Smell.
Carbanyl	Unbearably stifling
Phenyl mustard oil	Stifling
Anthranil	Penetrating
α-Phenyl triazine	Peculiarly alkaloidal
α-Phenyl isoxazol	" "
Diazobenzene imide	Stupefying ammoniacal
Benzoyl azo-imide	Intense
Benzylidene ethylamine	Stifling
Isoquinoline	Peculiar
Quinoline	"
Methyl quinolines	Penetrating
Acridine	Pervasive
Phenanthridine	Suffocating
Indol	Very unpleasant
Skatole	Fæcal-like
Ethylindoxyl	Indol-like
α-Methylindol	" "
α, β-Dimethylindol	" "

The phenyl and carboxyl derivatives of indol are not volatile and are therefore odorless.

What we have shown for nitrogen is probably also true for phosphorus. For the present, however, so few organic phosphorus compounds are available for comparison that we must confine our discussion to the phosphines. The disgusting smell of hydrogen phosphide becomes more penetrating with successive replacements of hydrogen by alkyl, phenyl or toly radicals, and is something fearful in the tertiary phosphines.

This increase in the smell through introduction of methyl groups appears to be a general phenomenon. Not only is the smell of an odoriferous substance increased but substances without smell can be converted in this way into compounds which do smell. Through successive replacements of hydrogen by methyl the smell of ammonia changes into that of pickled herring. Methyl quinone has a more penetrating odor than quinoline; skatole and dimethylindol smell stronger than indol; while the mercaptanes are much more unpleasant than hydrogen sulphide. By substitution we pass from the odorless propane to pentane which has an ethereal odor.

The phenomena with arsenic are similar to those with phosphorus. The most unpleasant smelling compounds are derivatives of trivalent arsenic. Arsenious hydride is more unpleasant than hydrogen phosphide and very much more unpleasant than ammonia. The arsines are bad-smelling liquids. The cacodyl compounds are very much worse, thus illustrating the effect of the methyl groups. This is the place to refer to the onion-like smell of trimethyl antimonide and to the unpleasant odor of trimethyl bismuthide.

These few phosphorus, arsenic, antimony and bismuth compounds must be considered as unsaturated because the elements appear in their trivalent form. More important, however, than these are the derivatives of bivalent sulphur. A large number of these have already been cited in Table VI. A few more are given in Table IX.

TABLE IX.

Name.	Smell.
Thiophene	Characteristic
Thienyl sulph-hydrate	Most unpleasant
Thiophene alcohol	Faintly aromatic
Thiophene aldehyde	Like benzaldehyde
Thiophthene	Tarry
Oxythionaphthene	Like phenol

It is to be noted that the invariable impurity of benzene, thiophene, is changed by the addition of an aldehyde group, just as benzene is, into a substance which smells like the oil of bitter almonds. This might be looked upon as a mere accidental coincidence were it not for the fact that the other derivatives of thiophene smell very like the corresponding benzene and naphthalene derivatives, as may be seen from Table X.

TABLE X.

Name.	Smell.
Naphthalene	Peculiarly tarry
Thiophthene	Tarry
α-Naphthol	Like phenol
Oxythionaphthene	" "
Benzyl alcohol	Aromatic
α-Thiophene alcohol	Faintly aromatic
Phenyl mercaptane	Most unpleasant
Thienyl sulph-hydrate	" "

(To be concluded.)

THE RISE IN SOAP.

[The London newspapers have this week been agitated by rumors of a rise in the price of soap, owing to the scarcity of tallow.

Our ancestors were not so fond
Of water or of washing:
They'd jump into the village pond,
And clean themselves by splashing.
They'd ne'er repine; complexions fine
They had, and likewise sallow;
They fed the cat on mutton fat,
And greased their boots with tallow.

But nowadays the belles and beaux
And babies all grow mopy
If they have freckles on their nose
Immune to water soapy:
A perfumed cake of special make
For each one, wise or callow,
Is what must be; no wonder we
Have seen a rise in tallow.—*C. and D.*

A concentrated paste is easy to use and economical—if it is good. The concentrated "Collodin Gum" paste, made by the Collodin Mfg. Co., of No. 100 William street, New York, is simple, handy and effective. You can paste labels—or anything from tin to glass with this remarkable compound. Write for a sample to the manufacturers.

FOREIGN CORRESPONDENCE.

[The news appearing under this heading from month to month is the latest possible authentic reports from the various floral culture centers or markets. Just because these are reports taken on the spot, reflecting actual conditions which are constantly changing, apparent contradictions are due to altered conditions, and must be so considered.—Ed.]

Cannes (A. M.), France.—The gathering of Jasmin is going on now. The blossoms are very abundant, because the dry weather which we have had for several months is well adapted to this flower. It will not be completely garnered until about October 15th.

The tuberose crop is quite good and is bringing the normal price.

The dry weather has done tremendous harm to the Lavender crop. It is now estimated that we shall have less than half a crop. In certain districts the crop is only a third of last year's, which was by no means good. The price now paid for Lavender flowers containing only 30% ester is from 27 to 28 francs (these are very ordinary flowers), and it seems probable that this price will be increased, as some German houses have come into the market to "bull the market," and are offering all kinds of prices for blossoms as well as oil. In this way they make the bad condition of affairs due to the poor crop even worse. This is sincerely to be regretted, and it is hoped on all sides that this "bull" movement will prove at fault. In this event the market, whose fluctuations depend on the larger or smaller account of Essential Oil distilled, would resume its natural elasticity, and it is probable that in the end we will get back to this natural state of affairs. In some sections they are now speaking of 30 to 35 francs for Lavender flowers producing 35% of Linalyl acetate. In any case it is certain that the price of Oil of Lavender will be considerably higher this year than last.

The crop of Aspic is announced to be good, normal in quality and price. The distillation of Oil of Aspic will cease by the 15th of September. The price of 8 to 9 francs is quoted for good quality, and this price will not be increased, as there is still some remainder of last year's crop.

Messina, Italy.—Oil of Lemon is still firm, and Oil of Bergamot is more than strong. The tendency seems to be upward for good qualities. The market is, however, flooded with low grade and adulterated oils, as is always the case when good oils are high in price. There is no special movement in Oil of Orange, sweet or bitter.

London, Eng.—The clove market is very strong on the report of very limited crop of cloves for the current year. There will be hardly more than forty thousand bales (140 lbs. each) as compared with almost two hundred thousand last year. The remainder from last year is not great.

Reports from Ceylon go to indicate a considerable advance in Oil Citronella. Since the government regulation as to quality, adulteration at home is impossible, and there has been a considerable falling off in production. All indications point to higher prices.

NEW FLOWER OILS.

Herr Hans Steche, head of the Leipzig house of Heine & Company, has just left the United States in company with his brother, Dr. Otto Steche, Ph. D., M. D., on a journey of exploration around the world. Their object in especially visiting the oriental countries is, besides regular business interests, to investigate the flora of these countries with a view of finding some odoriferous species which may prove valuable for the production of flower oils that have not been known heretofore. It is planned to establish extensive hot-houses in their new factory in Riesa on the Elbe in which these rare plants will be cultivated for experimental purposes.

It is hoped and expected that some very fine novelties will be produced in this way and Heine & Co., through their American branch house, may be depended upon to push these new oils where they will prove most valuable.

The extensive factory of Graham Bros. & Co., of Chicago, was totally destroyed by fire on the night of September 7th. We understand that the building will be reconstructed at once on the same site, and that arrangements have already been perfected for continuing this thriving business.

ON THE SCENT.

By Mr. S. Sence.

The fire in the factory of Colgate & Co., on the afternoon of the fourteenth of this month, was fortunately only trifling in extent.

That is quite a scheme of the Manhattan Soap Co. to give away a million cakes of Sweetheart Soap as an advertisement. It is pretty sure to bring some large results.

The Procter-Gamble Soap Co., which is building an extensive plant at Howland's Hook, Staten Island, is just completing its model dock on the Staten Island side of the Sound.

There is quite a to do in Buffalo over the sale of a mill race. We see that the Hoefner Soap Co. is one of the parties to the litigation, and naturally we look to see them march to victory.

That was a good idea to have a flavoring machine at work in the tobacco exhibition. It was one made by the Cardiveel Machine Company, and attracted attention from thousands of visitors.

There is considerable false information concerning perfumery appearing in the lay press of late. It only goes to show how necessary this magazine is. There will be some live discussion of these matters in the next issue.

Mr. F. S. Ammerman, the genial perfumer of Lazell, Dalley & Co., has found his fate at last. He was married on the 17th of September to Miss F. I. Green, of Brooklyn. Their friends extend hearty wishes for happiness to both.

If it prove true that some houses have been manufacturing flavoring extracts with wood alcohol, no penalty can be too heavy to inflict. We have our doubts, however, that any reputable house would perpetrate so dastardly a crime, for it is nothing less.

Of course, the soap men are in it. They are even in the latest Philadelphia financial sensation. The building which started Segal on his sensational career is now occupied by Eavenson & Sons. Philadelphia does not seem to be as slow in some directions as she is reputed to be.

The F. W. Scofield Co., of Des Moines, Iowa, though organized only a few months ago, is now in full operation. It is making a powdered hand soap, "Sure-Klean," free from oils or animal fat, acids, lye or potash. It is claimed that this soap will remove the worst stains, and is absolutely healthful.

We congratulate Mr. E. H. Burr on having gained a favorable decision in the matter of Floral Waters which had been classified as a medicinal preparation." This decision should prove most valuable to the entire trade, and the thanks of the other importers are certainly due Mr. Burr for his long and vigorous contest.

The very sad death of Mr. Henry K. Wampole, head of the well-known house of H. K. Wampole & Co., of Philadelphia and Perth, Ont., Can., was a great shock to his numerous friends. It seems a pity, indeed, that the misdoing of a trusted employee, and the revelations concerning his friend Hipple, should have had so terrible an effect upon Mr. Wampole's mind.

An Important Detail.—There is probably more money spent for handsome labels on perfumes, toilet preparations, flavoring extracts and the like than on any other canned or bottled goods sold today. But how many manufacturers use a paste that, for instance on tin, will not affect the delicate colors; peel in drying; warp or wrinkle the paper?

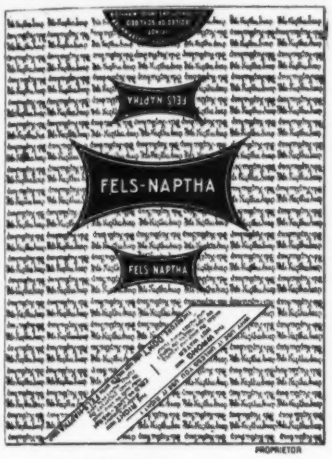
Where labeling machines are used it is particularly important that a proper gum be used to avoid stoppages, loss of labels, etc. It is of course poor policy to spoil good labels with poor paste.

We suggest that all readers of the American Perfumer and Essential Oil Review that have use for paste, but have not given the Arabol products a thorough test, to write to the manufacturers, whose ad. will be found on page 2, requesting a sample. Be sure to mention this journal.

THE NOSE HAD IT.

She said she loved me dearly,
And naught could me refuse;
But my nose her "yes" outbalanced,
For "Patchouly" she would use.

—*Ex.*



18,002

Beauto-Cream
10748

38,207

CARNIVAL
18756
VIOLETS
18,756

DUBARRY
18,150

ROBINIA
18,755

12,700

Amolin
11,951

COLGATE'S
18555

19,149

17,707

NUTROLA
19,101

COLGATE & Co.
18,556

DENTALUXE
15,412

PATENTS.

Granted August 14, 1906.

828,395.—Albert Frank, New York, N. Y., assignor one-half to Farkas Weisz, New York, N. Y. Non-refillable bottle.

828,474.—Will K. Hale, Catskill, N. Y., and Curtiss W. Kursteiner, Englewood, N. J. Process of obtaining turpentine, rosin, etc., from wood.

828,664.—Edwin N. Jones, San Francisco, Cal., assignor of one-half to Edloe C. Gassaway, San Francisco, Cal. Non-refillable bottle.

828,770.—James H. Parrish, Baltimore, Md., assignor to Caffeens Drug Co. Combined wrapper and label for bottles and boxes.

829,149.—Charles Haenner, Cleveland, Ohio. Non-refillable bottles.

829,275.—John E. Lee, Conshohocken, Pa., assignor to Johnson & Johnson, New Brunswick, N. J. Tooth powder can.

829,300.—Edward C. Spurge, Niagara Falls, N. Y., assignor to Ozone Vanillin Co. Process of making vanillin, etc.

Granted August 28, 1906.

829,619.—Horace F. Atkinson and Wm. R. Atkinson. Non-refillable bottle.

829,626.—Thos. F. Buck, Newark, N. J. Non-refillable bottle.

829,697, 829,698, 829,699.—Wm. H. Dodge, Montclair, N. J. Securing device for caps or closures for bottles, cans, jars, etc.

829,775.—Adelbert D. George and Austin B. George, Dixon, Ill. Non-refillable bottle.

829,778.—Henri M. Granier, Villenomble, Seine, France. Manufacture of sulfate of copper and caustic alkalis.

829,856.—Wm. H. Dodge, Montclair, N. J. Cap or closure for bottles, jars, cans, etc.

Granted September 4, 1906.

829,998.—Henry Parker, Brooklyn, N. Y. Non-refillable bottle.

829,999.—Orin Parker, Dubuque, Iowa. Apparatus for distilling water.

830,194, 830,195.—Edwin H. Baare, St. Louis, Mo., assignor to Wm. J. Lemp Brewing Co. Labeling machine.

830,205.—Thos. J. Cahill, Salem, O. Non-refillable bottle.

830,213.—Georges Darzens, Paris, France. Manufacture of an odoriferous aldehyde.

830,332.—Madeleine Kuess, Tunis, Tunis. A process of manufacturing soap which consists in adding hydrochloric acid to a mixture comprising mineral oil and saponified fat.

TRADE MARKS.

Published August 14, 1906.

9,674.—Commonwealth Mfg. Co., Portland, Me., and Boston, Mass. Methyl alcohol. ("Eagle Spirits.")

15,966.—Harry Knob, Cleveland, Ohio. Soap powder.

18,960.—Pratt Food Co., Philadelphia, Pa. Harness soap.

55,457.—J. G. Haas Soap Co., St. Louis, Mo. Laundry soap.

55,458.—The Kleanit Mfg. Co., Akron, Ohio. Soap containing a fine grit.

55,474.—William Waltke & Co., St. Louis, Mo. Soap.

55,475.—Armstrong Cork Co., Pittsburg, Pa. Bottle and prescription corks of all kinds.

55,478.—Fels & Co., Philadelphia, Pa. Soap.

55,573.—R. Hudnut's Pharmacy, New York, N. Y. Fluid soap.

Published August 21, 1906.

4,663.—August W. Stadler, Cleveland, Ohio. Soap.

5,740.—Aug. W. Stadler, Cleveland, Ohio. Soap.

6,496.—William Waltke & Co., St. Louis, Mo. Laundry soap.

8,357.—Franz P. Dengler, Davenport, Ia. Flavoring extracts.

9,351.—D. D. D. Company, Chicago, Ill. Dennisol Dermic Dissolvent, a substitute for soap.

11,012.—Sidney H. Smith, Chicago, Ill. Boro-Wych tooth powders, etc.

13,004, 13,006.—James F. Johnson, New York, N. Y. Golden bath and tooth powders, perfumes, toilet waters, hair tonic, etc.

14,248.—Michael Hayes Johnston, Galesburg, Ill. Soap.

15,517.—The Sanitol Chem'l Lab'y Co., St. Louis, Mo. Sanitol toilet and shaving soaps.

16,572.—The Hygenol Co., Minneapolis, Minn. "Hygenol," a hair tonic and shampoo.

17,627.—Moss Morris, Brooklyn, N. Y. "Radium Bay," a tonic for the hair.

17,285.—Alphonse Chauvin, New York, N. Y. Soap.

20,126.—Wm. B. Riker & Son Co., New York, N. Y. "Septone," hair tonic.

55,630.—The C. B. Woodworth Sons Co., Rochester, N. Y., Perfumes.

55,690.—Lambert Pharmacal Co., St. Louis, Mo. Tooth powder.

55,697.—The Mistletoe Mfg. Co., Denver, Col. Cream for the toilet.

55,835.—Sprague, Warner & Co., Chicago, Ill. Flavoring extracts.

55,846, 55,847, 55,848, 55,849, 58,886.—Colgate & Co., Soap and Soap Powders.

55,853.—Fred Fear & Co., New York, N. Y. Scrubbing soap.

55,889.—Dr. Charles Co., New York, N. Y. Medicated soap.

55,890.—Dr. Charles Co., New York, N. Y. Face powder.

55,904.—Robert L. Newell, Union, Neb. Tooth cleaning paste.

55,974.—Morgan Chubb, Brooklyn, N. Y. Toilet powder.

55,990.—Sanitol Chem'l Lab'y Co., St. Louis, Mo. Dentifrice.

56,015.—Leffler Mf'g Co., New York, N. Y. Perfume.

56,022.—The Sanitol Chem'l Labr'y Co., St. Louis, Mo. Toilet powder.

56,051.—The Sanitol Chem'l Labr'y Co., St. Louis, Mo. Face powder.

56,060.—S. R. Van Duzer, New York, N. Y. Lotion.

Published August 28, 1906.

10,748.—Ferdinand Herb, Superior, Wis. A skin food in liquid form.

17,707.—R. Hudnut's Pharmacy, New York, N. Y. Cold cream.

18,002.—Fels & Co., Philadelphia, Pa. Soap.

18 150.—R. Hudnut's Pharmacy. Liquid and powdered perfumes.

56,128.—Chauncey S. Van Orden, Brooklyn, N. Y. Tooth powder.

66,141.—A. Mendellson's Sons, Albany, N. Y. Potash and lye. For dandruff cure and hair tonic.

12,700.—Carrol E. Gates, Syracuse, N. Y., assignor to Thos. L. Norton, Holcomb, N. Y. Medicated antiseptic plastic soap.

15,412.—R. Hudnut, New York, N. Y. Tooth powder.

18,555, 18,556, 18,755, 18,756.—Colgate & Co., New York. Liquid and powder perfumes.

19,101.—J. T. Kenny & Co., St. Paul, Minn. Soft soap.

19,149.—Darlie M. Hanna, Fairfield, Ind. Hair tonic.

Published September 4, 1906.

11,951.—Amolin Chemical Co., New York, N. Y. Toilet powder.

56,128.—Chauncey S. Van Orden, Brooklyn, N. Y. Tooth powder.

56,141.—A. Mendellson's Sons, Albany, N. Y. Potash and lye.

56,212.—Griggs, Cooper & Co., St. Paul, Minn. Toilet and laundry borax.

56,242.—J. B. Williams Co., Glastonbury, Conn. Shaving soap.

56,241.—Hutchins Pharmacal Co. Hair and skin tonics.

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